

- 14 -

**Claims:**

1. A cover for a substrate including:  
a body defining a cavity, for positioning over the substrate to form a reaction chamber;  
and  
5 a projection extending from the body to define a fluid reservoir, when the cover is fitted to the substrate, the fluid reservoir being in fluid communication with the cavity.
2. A cover, as claimed in claim 1, wherein the cavity extends the full width of a sample holding region of the substrate.
3. The cover as claimed in one of claims 1 or 2 wherein a protrusion extends from the  
10 projection, to assist in wicking fluid into the reservoir.
4. A cover as claimed in claim 3, wherein the reservoir is defined by a first section, angled at least at substantially  $60^\circ$  relative to the cavity, and a second section, positioned between the cavity and the first section, and orientated at a reduced angle relative to the cavity, as compared to the first section.
- 15 5. A cover as claimed in claim 4, wherein the second section is angled at least at substantially  $15^\circ$ .
6. A cover as claimed in any one of claims 1 to 5 wherein the cover is made from a polymer material.
7. A cover as claimed in any one of claims 1 to 6 wherein the cavity includes a coating of  
20 reduced surface roughness than the polymer material.
8. A cover as claimed in claim 7 wherein the cavity includes a coating with reduced porosity.
9. A cover as claimed in claim 7 or 8 wherein the cavity has one or more coatings.
10. A cover as claimed in claim 9 wherein a first coating is a material having similar  
25 properties to the material of the slide.
11. A cover as claimed in claim 10 wherein the first coating is silicon dioxide.

**Best Available Copy**

- 15 -

12. A cover as claimed in claim 11 wherein a second coating is placed intermediate a first coating to provide improved contact properties between the cover and first coating.
13. A cover as claimed in any one of the preceding claims wherein the width of the cavity of the cover is the no larger than the width of a microscope slide.
- 5 14. A cover as claimed in any one of claims 1 to 13, wherein the cavity is substantially planar.
15. A cover as claimed in any one of claims 1 to 14, further including a locator for controlling and locating the cover, the locator being arranged at an end of the cover opposite the projection.
- 10 16. A cover as claimed in any one of claims 1 to 15, further including a second reservoir, at an opposite end of the cover.
17. A cover as claimed in any one of the preceding claims, wherein wall portions are located at the edge of the cover, surrounding the cavity on two or more sides.
18. A cover as claimed in claim 17, wherein the reservoir is defined between the  
15 projection, and legs located on either side of the cover.
19. A cover as claimed in claim 18, wherein legs extend along the sides of the cavity to form the wall portions.
20. A cover according to claim 18 wherein the cover is supported upon the substrate on the wall portions.
- 20 21. A covertile according to claim 15 wherein the cavity extends to an end edge of the cover adjacent the locator.
22. A cover as claimed in any one of claims 1 to 21, wherein the cover has associated wing structures that allow the cover to be engaged and pivoted relative to the substrate so as to open the reaction chamber and allow the slide to be cleared of fluid.
- 25 23. A combination of a substrate and a cover, as claimed in any one of claims 1 to 22, wherein the cavity of the cover is arranged to face the substrate so as to form a reaction chamber.

Best Available Copy

- 16 -

24. A method of treatment of a sample on a sample holding region of a substrate including locating a cover, as claimed in any one of claims 1 to 22, over the substrate, so that the cavity of the cover faces the substrate to form a reaction chamber over the sample holding region, and depositing fluid into the fluid reservoir to allow the fluid to be drawn into the reaction chamber, as required.
25. A method as claimed in claim 24, further including sliding the cover relative to the substrate to vary a degree of overlap between the cover and the sample holding region, which results in a corresponding variation in the reaction chamber volume.
26. A method as claimed in claim 24 or 25, further including sliding the cover relative to the substrate until wing structures associated with the cover are engaged and lifted relative to the substrate to pivot the cover into an open condition, and allow fluid to drain from the reaction chamber.

Best Available Copy